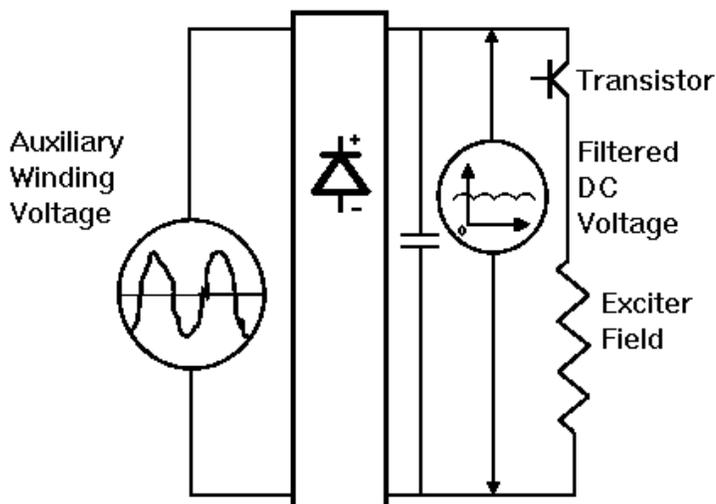
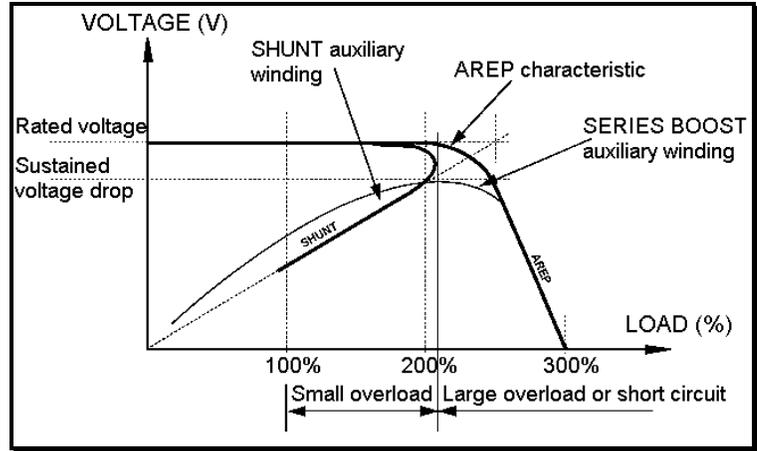


AREP Excitation System & Non Linear Loads

The AREP excitation system is a state of the art system that combines simplicity and performance without the need to add a Permanent Magnet Generator inside the alternator. The voltage regulator is wired like a simple shunt voltage regulator. One key element of the AREP excitation system is its ability to operate with all types of load including heavy SCR, UPS or VFD. The AREP voltage regulator is energized by two auxiliary windings wound above the stator winding. One auxiliary winding produces a voltage proportional to the output voltage of the unit. The other acts like a current transformer and produces a voltage proportional to the output current of the unit. The two are combined inside the voltage regulator by a simple rectifier bridge. The output is a DC voltage that is filtered by a capacitor. This filtered DC voltage energizes the control section of the regulator. It also energizes the exciter field of the alternator through the power transistor. This system provides a constant power source for the voltage regulator.



The AREP system inherent ability to work with non linear loads comes from the filtered DC power supply and its power transistor. The filtered DC power supply provides a clean DC source of power for the Automatic Voltage Regulator that is independent of the load distorted output voltage of the alternator. In addition, the transistor is operated in Pulse Width Modulation at a frequency different than the synchronous and therefore prevents load SCR tracking. The ability of the AREP system to work with non linear loads does not replace the normal consideration to the sizing of the alternator and the effect of the voltage harmonics to the stability or performance of the load itself.